



Distribution of soft bottom sediments in the Portuguese Continental Shelf

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ABSTRACT

This work presents a simplified map of the spatial distribution of surficial sediments and rock outcrops along the Portuguese continental shelf in ArcGIS format.

Nearly 500 samples of soft bottom shelf sediments were collected in the scope of several research projects and analyzed for grain-size. Based on the raw grain-size data, the samples were classified according to a modified version of the Folk classification system and used to create a new sediment distribution map and develop an easy-to-use GIS interface

Preliminary map preparation involved scanning, georeferencing and digitizing of pre-existing base maps from the Portuguese Hydrographic Institute (1985, 1986, 2005, 2010) and harmonization with other published and non-published cartographic information.

Grain-size analysis was performed using dry and wet sieving following the procedure described by Quintino *et al.* (1989).

Raw grain-size data were expressed as weight percentages and classified according to a modified version of the Folk classification system (Fig. 1)

Combining the textural domains defined by the samples analysed during the present investigation with the existing cartographic information, it was possible to produce the sediment distribution map shown in Figure 2.

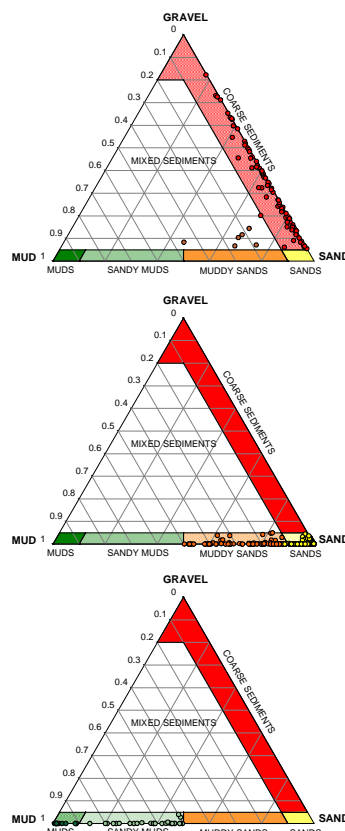


Fig 1. Modified Folk classification diagram (a) Coarse and mixed sediments; (b) sands and muddy sands; (c) muds and sandy muds

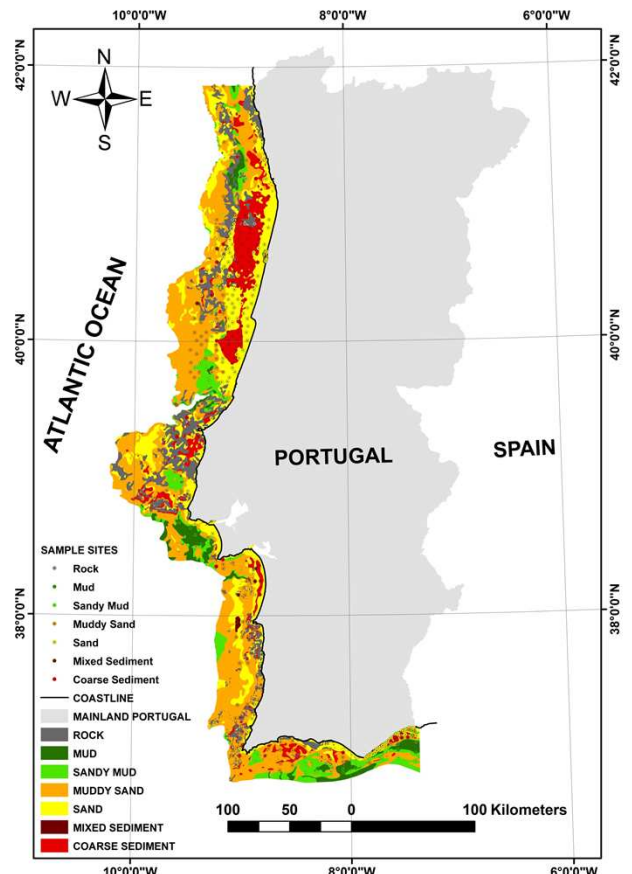


Fig 2. Preliminary map of the spatial distribution of surficial sediments and rock outcrops along the Portuguese Continental Shelf. Spatial Reference: UTM, WGS 1984 (modified from published maps from the Portuguese Hydrographic Institute – IH).

CONCLUSION

Overall, the bottom sediment distribution patterns for the Portuguese Continental Shelf show that:

1- the coarser deposits occur mainly in the inner and mid-shelf of the northwestern sector of the Portuguese shelf, to the south of the Nazaré and Setúbal canyons, and are sparsely represented in the southern shelf.

2- sand banks dominate the near shore shelf;
3- muddy sands characterize the deeper shelf;
4- patches of sandy mud and mud cover a large sector of the southern shelf and the areas located off the major rivers mouths in the western shelf;
5- mixed sediments are residual;

6- rock outcrops are unevenly distributed throughout the entire shelf

REFERENCES
FOLK, R.L. (1965). *Petrology of Sedimentary Rocks*, Hemphill
INSTITUTO HIDROGRÁFICO (1985; 1986; 2005; 2010 a, b e c) Carta de Sedimentos Superficiais da Plataforma Continental, Escala 1:150.000: Folhas SED 1 (Caminha - Espinho), SED 2 (Espinho - Cabo Mondego), SED 4 (Cabo Carvoeiro - Cabo da Roca), SED 5 (Cabo da Roca - Cabo de Sines), SED 6 (Cabo de Sines - Cabo de São Vicente), SED 7 e 8 (Cabo de São Vicente - Rio Guadiana
QUINTINO, V., RODRIGUES, A. M. & GENTIL, F. (1989) – Assessment of macrozoobenthic communities in the lagoon of Óbidos, western coast of Portugal. *Scientia Marina*, 53, 645–654